FIG.1A

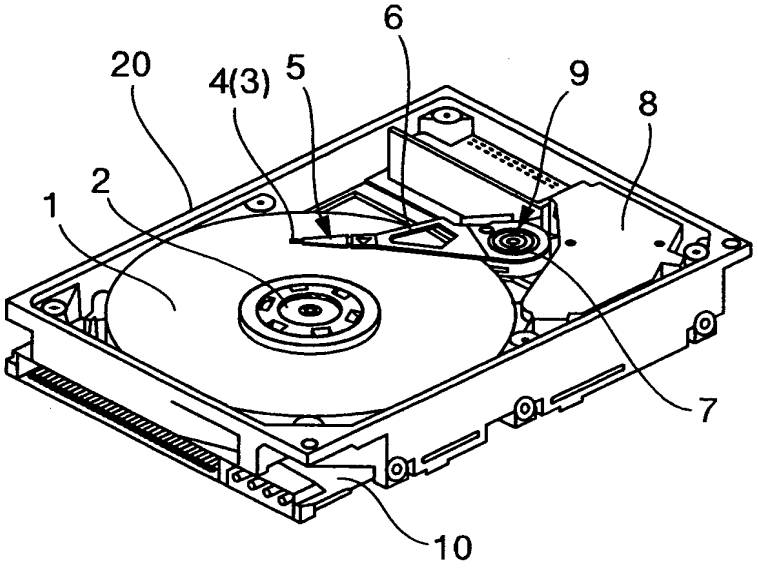

6
20
4(3)
5
9
8
2
1
7
10

FIG.1B

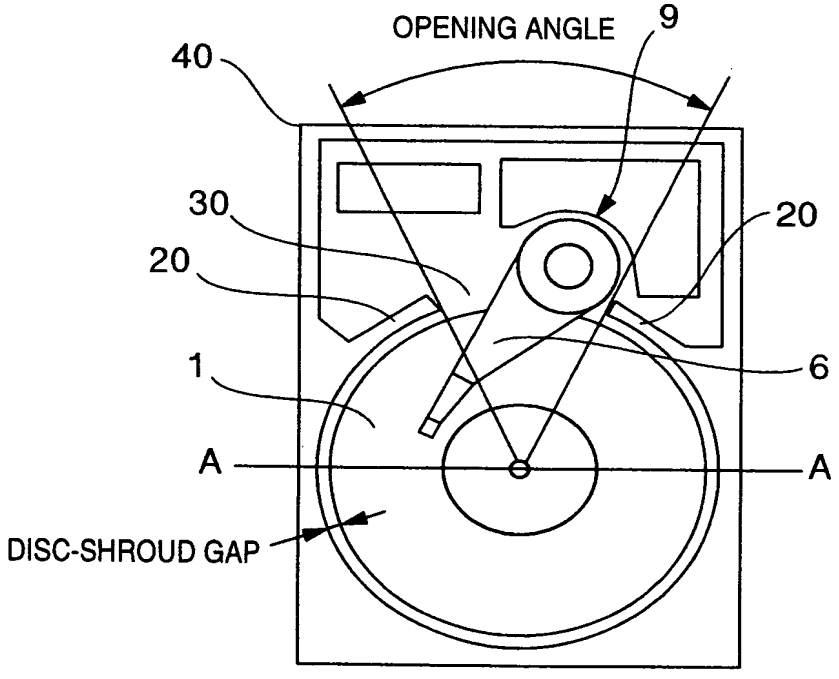

OPENING ANGLE
9
40
30
20
20
1
6
A
A
DISC-SHROUD GAP

FIG.2

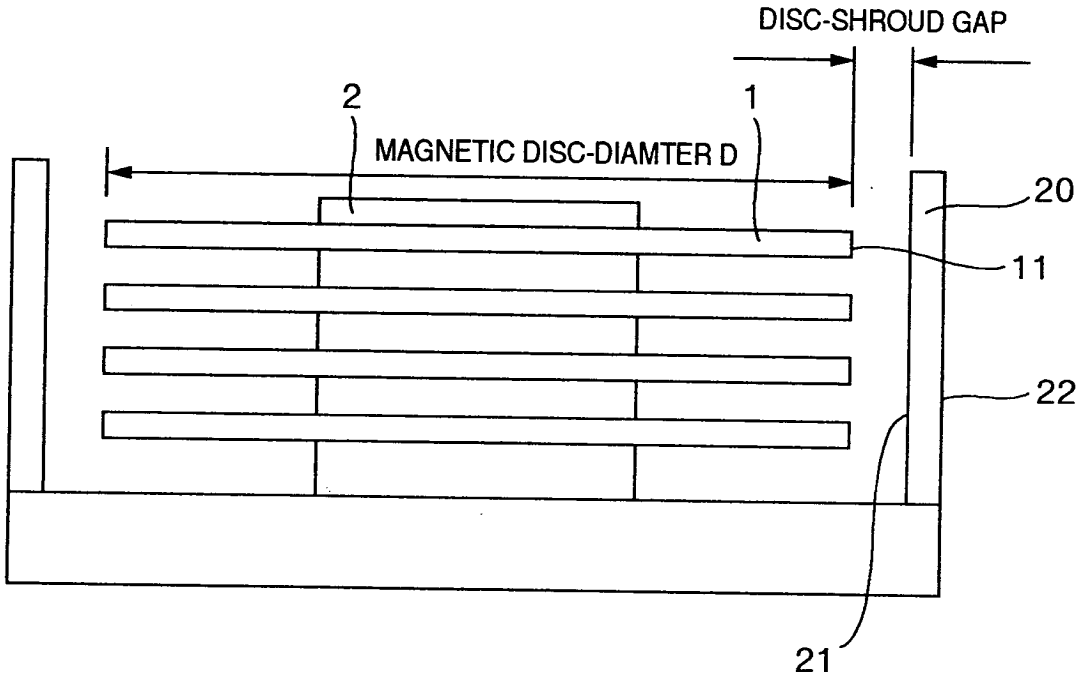


FIG.3

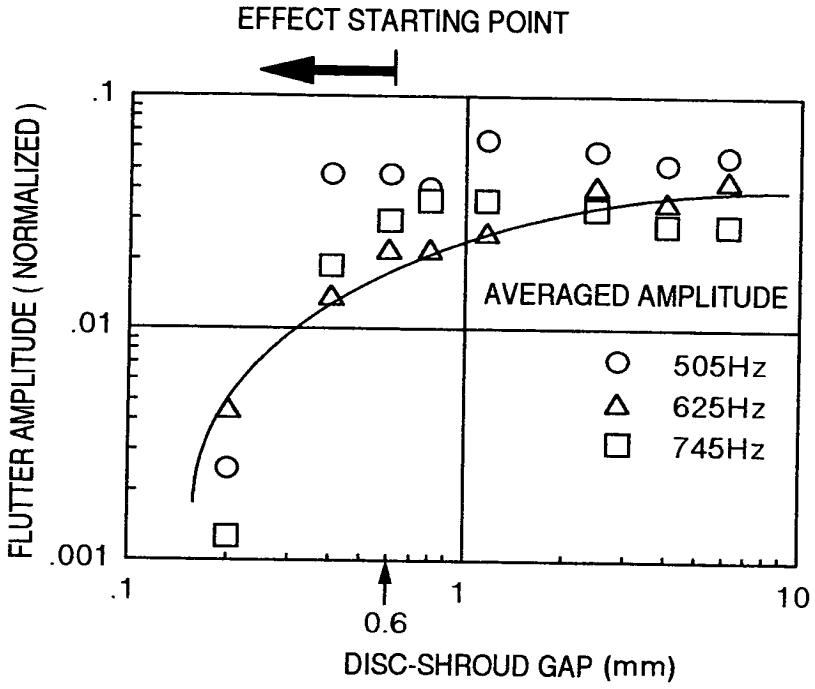

EFFECT STARTING POINT
.1
.01
.001
FLUTTER AMPLITUDE (NORMALIZED)
AVERAGED AMPLITUDE
505Hz
625Hz
745Hz
.1
1
10
0.6
DISC-SHROUD GAP (mm)

FIG.4A

DISC-SHROUD GAP = 2 mm

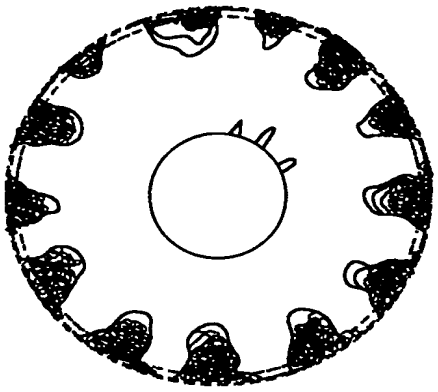


FIG.4B

DISC-SHROUD GAP = 1 mm

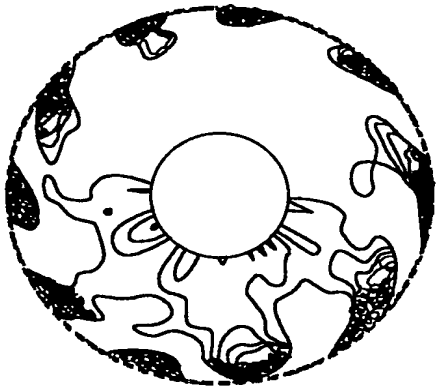


FIG.4C

DISC-SHROUD GAP = 0.5 mm

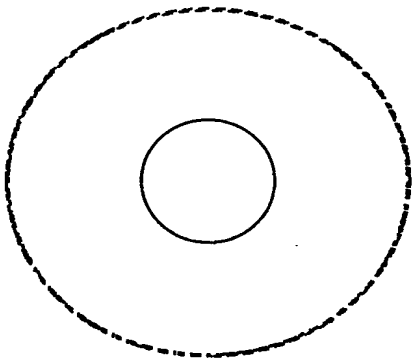


FIG.4D

DISC-SHROUD GAP = 0.2 mm

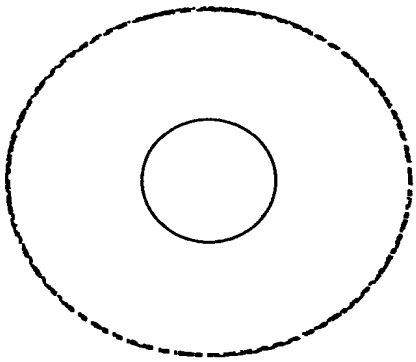
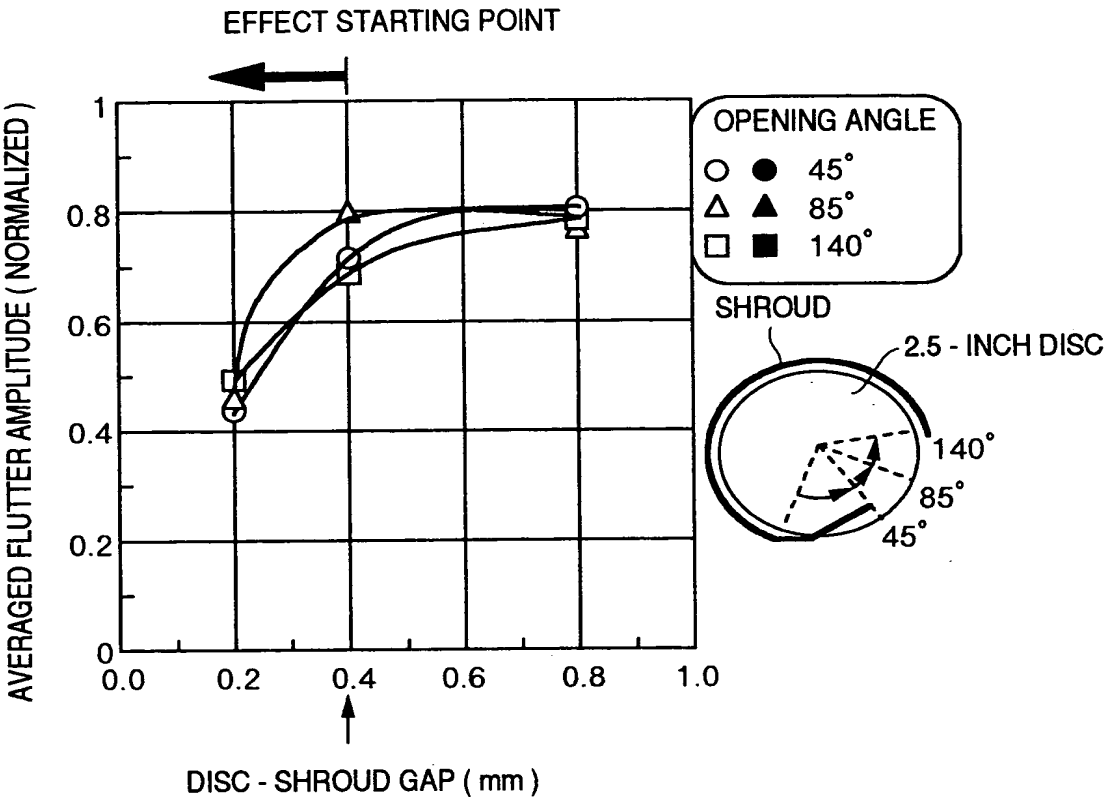


FIG.5


EFFECT STARTING POINT
AVERAGED FLUTTER AMPLITUDE (NORMALIZED)
1
0.8
0.6
0.4
0.2
0
0.0
0.2
0.4
0.6
0.8
1.0
DISC - SHROUD GAP (mm)
OPENING ANGLE
45°
85°
140°
SHROUD
2.5 - INCH DISC
140°
85°
45°